AIR COMMAND HEADQUARTERS

OPERATIONAL RESEARCH DIVISION

REPORT 94/4

DETERMINING THE EFFECTS OF OFFICIAL LANGUAGE POLICY ON ANGLOPHONE - FRANCOPHONE MIXTURES

by

J.M.H. Adamsson

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Operational Research Division Reports present the considered results of project analyses to sponsors and interested agencies in an expeditious manner. They do not necessarily represent the views of the Canadian Department of National Defence

Report prepared under Project Number 64518

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ABSTRACT

A model to determine the effect of changes to Official Languages policy on Air Command units and personnel was developed. The model calculates the effect of changing the Francophone to Anglophone ratio at English, French, Bilingual, and Unspecified units. The effects on rank and Establishment Military Occupation Code (EMOC) composition are calculated.

A database tool was developed in FoxPro to portray the effects of changes in the Francophone to Anglophone ratio, and the effect of changing the language designation of units. This tool shows the effect on units, on EMOCs, and on ranks of these changes. A utility to create the needed databases from previously existing databases is included.

RÉSUMÉ

On a élaboré un modèle pour déterminer l'incidence des changements apportés à la politique des langues officielles sur le personnel et les unités du Commandement aérien. Le modèle permet de calculer les effets produits par la modification du rapport entre le nombre de francophones et d'anglophones au sein des unités anglophones, francophones et bilingues, ainsi qu'au sein des unités n'ayant pas de désignation linguistique. Il permet également d'évaluer l'effet de ces changements sur la composition des unités selon le grade et les codes de groupe professionnel militaire (CGPM).

On a établi une base de données à l'aide du logiciel FoxPro pour refléter les effets produits par le changement du rapport entre le nombre de francophones et d'anglophones et le changement de désignation linguistique des unités. Cet outil permet de montrer l'incidence des changements sur les unités, les CGPM et les grades. Il comprend un utilitaire permettant de créer les bases de données dont on a besoin à partir de bases de données existantes.

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EXECUTIVE SUMMARY

1. The Operational Research division of Air Command Headquarters was asked to develop a model to analyze the effects of changes in Official Language policy on Air Command units. Official Language policy includes a model for the Canadian Forces which specifies the desired level of participation of Anglophone and Francophone military personnel at English, French, and Bilingual units.

2. A mathematical model, based on the one used by the Official Language policy, was developed that showed the effect of changes on the unit, rank, and occupation structure within Air Command. The model calls for the use of establishment, personnel, and unit data.

3. A program was written in FoxPro to display the implications of the CF Official Language policy on Air Command. The program pulls in data from current military establishment and personnel databases to produce an up to date picture of Air Command from an Official Language perspective. It allow for the impact of changes in the CF Official Language model, or to the language designation of units, to be seen.

4. The screen shown in Figure A1 is used to enter the Official Language model to be studied. The percentages are the percentage of Francophone participation in the position and unit given. For example, this shows that 75% of bilingual positions in French Language Units (FLUs) are to be filled by Francophone personnel.

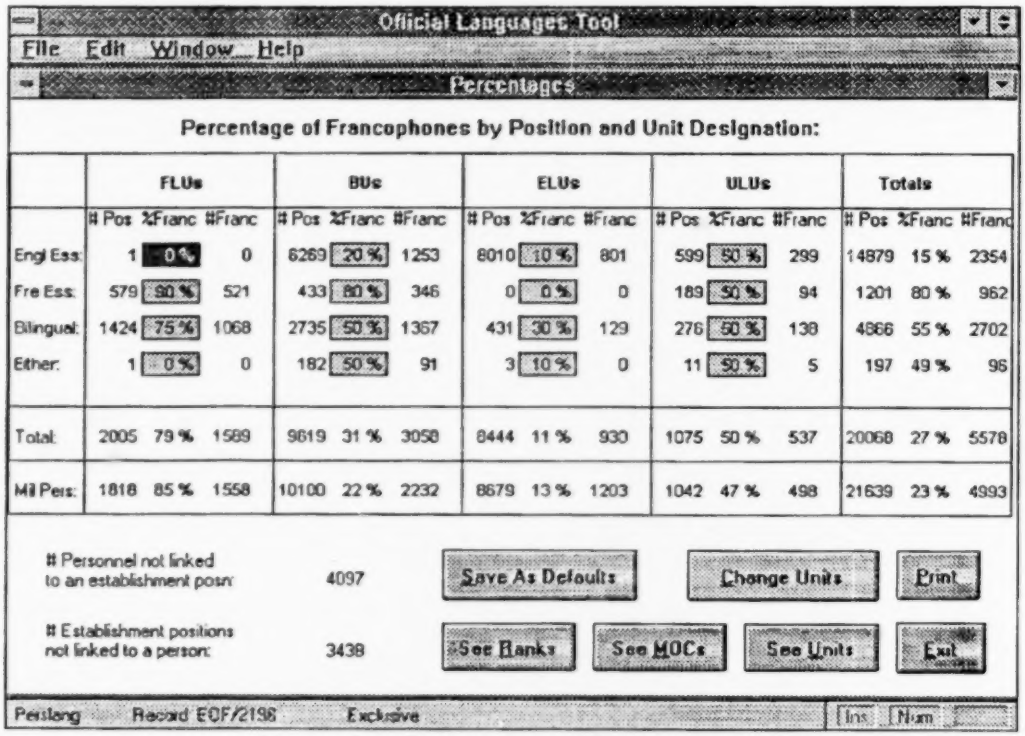
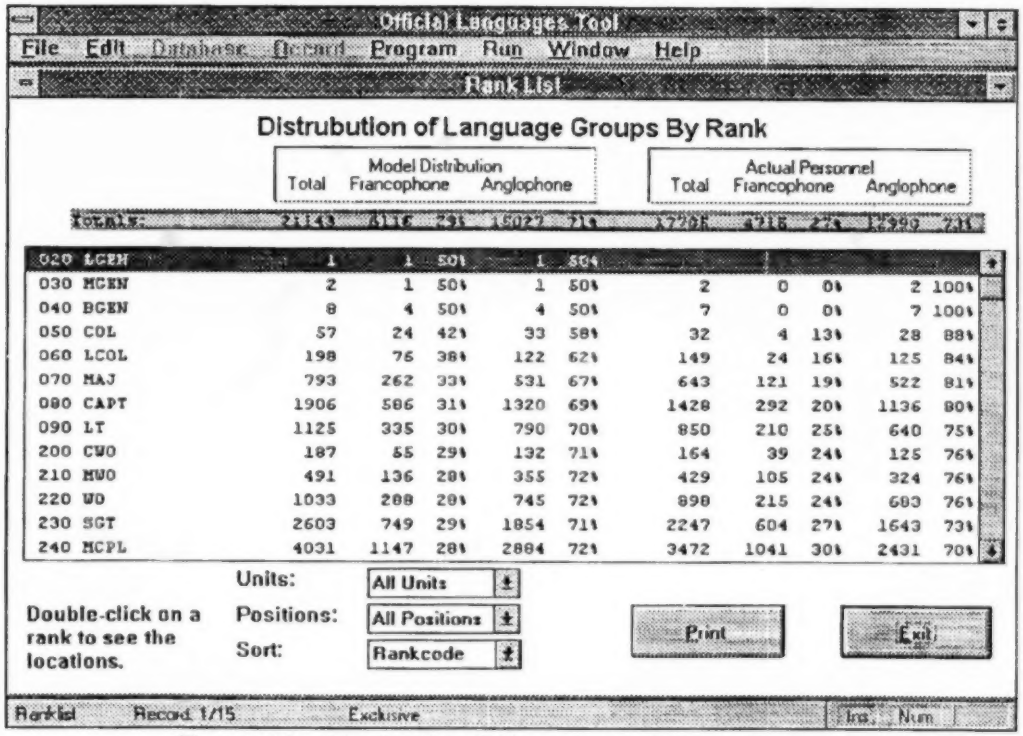


Figure A1 - Percentage of Francophones

5. The overall effects of the model inputs on Air Command can be instantly seen in the Total section. Also shown are the current configuration of military personnel, for comparison to the model outputs.

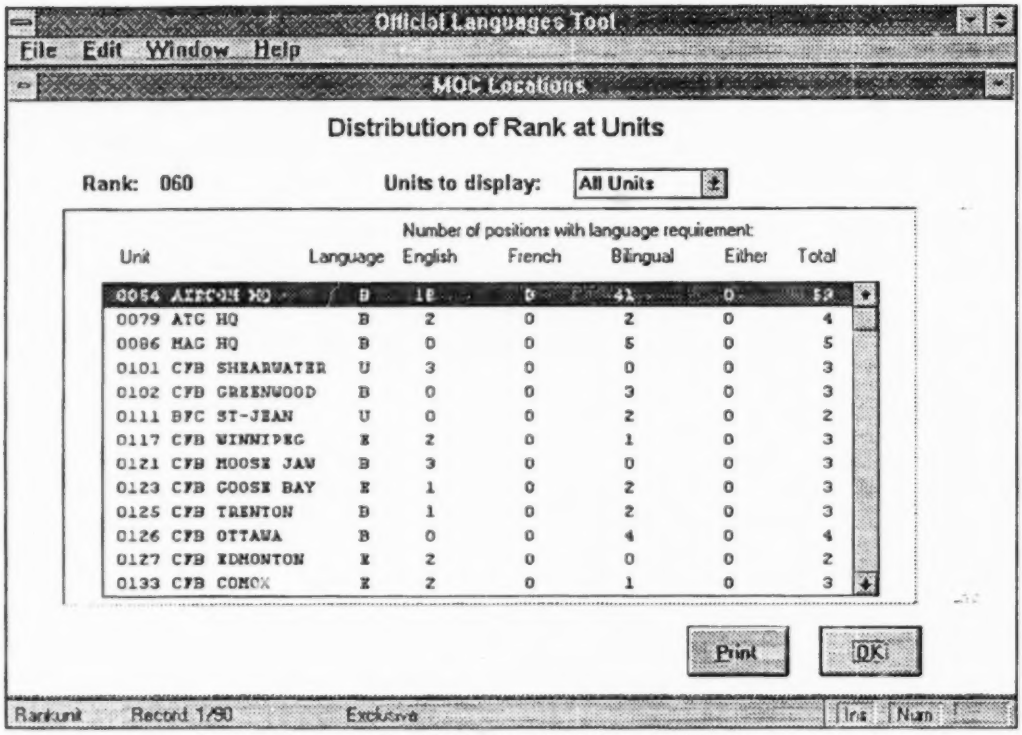
6. Any new figures entered on this screen will be erased when the program is exited. To save the figures so that they appear every time the program is run, click on the **Save as Defaults** button. The **Change Units** button allows for the alteration of the language designation of a unit, and also permits the outright deletion of a unit.

7. The options to **See Ranks**, **See MOCs**, and **See Units** work in a similar manner. For instance, by choosing the **See Ranks** button, the screen in Figure A2 appears.


Official Languages Tool
File Edit Database Record Program Run Window Help
Rank List
Distrubution of Language Groups By Rank
Model Distribution
Total Francophone Anglophone
Actual Personnel
Total Francophone Anglophone
020 LGEN 1 1 50% 1 50%
030 MGEN 2 1 50% 1 50% 2 0 0% 2 100%
040 BGEN 8 4 50% 4 50% 7 0 0% 7 100%
050 COL 57 24 42% 33 58% 32 4 13% 28 88%
060 LCOL 198 76 38% 122 62% 149 24 16% 125 84%
070 MAJ 793 262 33% 531 67% 643 121 19% 522 81%
080 CAPT 1906 586 31% 1320 69% 1428 292 20% 1136 80%
090 LT 1125 335 30% 790 70% 850 210 25% 640 75%
200 CWO 187 55 29% 132 71% 164 39 24% 125 76%
210 MWO 491 136 28% 355 72% 429 105 24% 324 76%
220 WO 1033 288 28% 745 72% 898 215 24% 683 76%
230 SGT 2603 749 29% 1854 71% 2247 604 27% 1643 73%
240 MCPL 4031 1147 28% 2884 72% 3472 1041 30% 2431 70%
Units: All Units
Positions: All Positions
Sort: Rankcode
Double-click on a rank to see the locations.
Print
Exit
Ranklist Record 1/15 Exclusive Ins Num
Figure A2 - Distribution Of Language Groups By Rank

8. This screen shows the distribution of personnel of each language group by rank. Both the model distribution, according to current establishment information, and the actual distribution, based on the actual personnel in the establishment positions. For example, the model says that there are 198 LCol positions, 38% of which should be filled by Francophone personnel. However, of the 198 positions, 149 are currently filled, and 15% of them are Francophone.

9. Additional information can be obtained by double-clicking on any of the ranks listed. The screen in Figure A3 appears, which gives the distribution of the rank throughout Air Command, and the language designation of those positions.


Official Languages Tool
File Edit Window Help
MOC Locations
Distribution of Rank at Units
Rank: 060
Units to display: All Units
Number of positions with language requirement:
Unit Language English French Bilingual Either Total
0079 ATG HQ B 2 0 2 0 4
0086 MAC HQ B 0 0 5 0 5
0101 CFB SHEARWATER U 3 0 0 0 3
0102 CFB GREENWOOD B 0 0 3 0 3
0111 BFC ST-JEAN U 0 0 2 0 2
0117 CFB WINNIPEG E 2 0 1 0 3
0121 CFB MOOSE JAW B 3 0 0 0 3
0123 CFB GOOSE BAY E 1 0 2 0 3
0125 CFB TRENTON B 1 0 2 0 3
0126 CFB OTTAWA B 0 0 4 0 4
0127 CFB EDMONTON E 2 0 0 0 2
0133 CFB COMOX E 2 0 1 0 3
Print
OK
Rankunit Record 1/90 Exclusive Ins Num
Figure A3 - Unit Distribution of a Rank

10. This tool was designed to be used with the Establishment Management Tool (EMT) currently under development by the Operational Research Division, and will eventually become a part of the larger EMT. The data requirements are identical to those already being used for the EMT, thereby easing the burden of data collection. In the future, the program could be adapted to answer personnel questions, such as questions on the bilingual profiles of personnel.

DETERMINING THE EFFECTS OF OFFICIAL LANGUAGE POLICY ON ANGLOPHONE - FRANCOPHONE MIXTURES

1 - INTRODUCTION

1. At ref 1, The Operational Research Division of Air Command Headquarters was asked to assist in determining the impact of changes in Official Languages policy on Air Command units. In particular, the request was to provide a mechanism to determine the effect on Air Command personnel of adjustments in Anglophone/Francophone percentages at the various units.

2. Each unit in the Canadian Forces is given one of four designations: English, French, Bilingual, or Unspecified. The desired percentage of Francophone personnel in each type of unit is specified by Official Languages policy. The combination of this policy and unit designations can be used to predict an ideal mixture of Anglophone and Francophone members.

3. A tool was provided in FoxPro which allows the user to see the effect of changing the desired Anglophone/Francophone mixture at each unit. The tool also displays the effect of policy changes on specific units, on each Military Occupation Code (MOC), and on each rank.

2 - OFFICIAL LANGUAGES POLICY

4. The current Department of National Defence (DND) Official Languages policy is contained in ref 2. The portions of this policy relevant to this study is termed the Canadian Forces Official Languages Model, and is summarized below.

5. Every unit in the Canadian Forces (CF) is given one of four designations: English Language Unit (ELU), French Language Unit (FLU), Bilingual Unit (BU), or Unspecified Language Unit (ULU). The current policy is that the proportion of Francophones in ELUs should not exceed 10%, and the proportion of Anglophones in FLUs should not exceed 10%. Also, the BU manning should be representative of the National Representational Groups (NRG) ratio; in other words, it should be the same as the proportion of Anglophones to Francophones in the country as a whole. The percentage in ULUs is not specified in the policy.

6. In addition to unit language designations, each position has one of four designations: English Essential, French Essential, Bilingual, or Either. The terms English and French Essential are self-explanatory. A Bilingual position requires knowledge of both Official Languages, while an Either position requires the knowledge of one Official Language.

3 - OFFICIAL LANGUAGES MODEL

7. The Official Languages model can be described mathematically. Define:

$$P_{i,j} = \textit{Percentage of Francophones in a unit of type } i \textit{ and position of designation } j$$

where the units are designated as:

$$i = \begin{cases} 1 & \textit{English Language Unit} \\ 2 & \textit{French Language Unit} \\ 3 & \textit{Bilingual Unit} \\ 4 & \textit{Unspecified Language Unit} \end{cases}$$

and positions as:

$$j = \begin{cases} 1 & \textit{English Essential} \\ 2 & \textit{French Essential} \\ 3 & \textit{Bilingual} \\ 4 & \textit{Either} \end{cases}$$

The term $P_{i,j}$ designates the percentage of Francophones in each unit and position combination according to the Official Languages model. For example, a value of 0.8 for $P_{2,3}$ would indicate that 80% of Bilingual positions in French Language Units would be staffed by Francophones, and the other 20% by Anglophones. Likewise, define:

$$N_{i,j} = \textit{Number of positions in all units of type } i \textit{ and designation } j$$

where i and j are as defined above.

8. The values for the $P_{i,j}$ are set by DND Official Language policy. The values of the $N_{i,j}$ are taken from the current establishment of Air Command military personnel. From these values, overall figures for the number and percentages of Francophones in Air Command can be derived. The number of Francophones at units of type i is given as:

$$F_i = \sum_{j=1}^{4} P_{i,j} * N_{i,j}$$

and the model proportion of Francophones, P_i, in units of designation in Air Command is:

$$P_i = \frac{\sum_{j=1}^{4} P_{i,j} * N_{i,j}}{\sum_{j=1}^{4} N_{i,j}}$$

$$= \frac{F_i}{\sum_{j=1}^{4} N_{i,j}}$$

This gives a total number of Francophones in Air Command as:

$$F = \sum_{i=1}^{4} \sum_{j=1}^{4} P_{i,j} * N_{i,j}$$

$$= \sum_{i=1}^{4} F_i$$

and an overall proportion of Francophones:

$$P_i = \frac{\sum_{i=1}^{4} \sum_{j=1}^{4} P_{i,j} * N_{i,j}}{\sum_{i=1}^{4} \sum_{j=1}^{4} N_{i,j}}$$

$$= \frac{F}{\sum_{i=1}^{4} \sum_{j=1}^{4} N_{i,j}}$$

9. The effects of the policy can also be examined on a smaller scale. The Official Languages policy [ref 2, p. 2-10] states that: "In the CF, the long term objective concerning equitable participation is to attain the NRG ratio ... at all levels of responsibility and in all Military Occupation Categories (MOC)." The values of

$P_{i,j}$ given by the policy can be used to determine the proportion of Francophones in each MOC as follows. Define:

$G_{m,i,j}$ = *Number of MOC m positions in all units of type i and designation j*

Then the number of Francophones in MOC m, represented by G_m, as predicted by Official Languages policy, is:

$$G_m = \sum_{i=1}^{4}\sum_{j=1}^{4} G_{m,i,j} * P_{i,j}$$

and the proportion of Francophones in MOC m is:

$$M_m = \frac{\sum_{i=1}^{4}\sum_{j=1}^{4} G_{m,i,j} * P_{i,j}}{\sum_{i=1}^{4}\sum_{j=1}^{4} G_{m,i,j}}$$

$$= \frac{G_m}{\sum_{i=1}^{4}\sum_{j=1}^{4} G_{m,i,j}}$$

10. A similar procedure can be used to determine the number and proportion of Francophones at each rank level. Define:

$H_{r,i,j}$ = *Number of Rank r positions in all units of type i and designation j*

Then the number of Francophones at rank level r, as predicted by Official Languages policy, is:

$$H_r = \sum_{i=1}^{4}\sum_{j=1}^{4} H_{r,i,j} * P_{i,j}$$

and the proportion of Francophones at rank level r is:

$$R_r = \frac{\sum_{i=1}^{4}\sum_{j=1}^{4} H_{r,i,j} * P_{i,j}}{\sum_{i=1}^{4}\sum_{j=1}^{4} H_{r,i,j}}$$

$$= \frac{H_r}{\sum_{i=1}^{4}\sum_{j=1}^{4} H_{r,i,j}}$$

11. The equations given above describe the predicted effects of Official Language policy on each rank level and MOC. These values can be compared to the actual values, as taken from personnel lists, to give a comparison of actual values to predicted values.

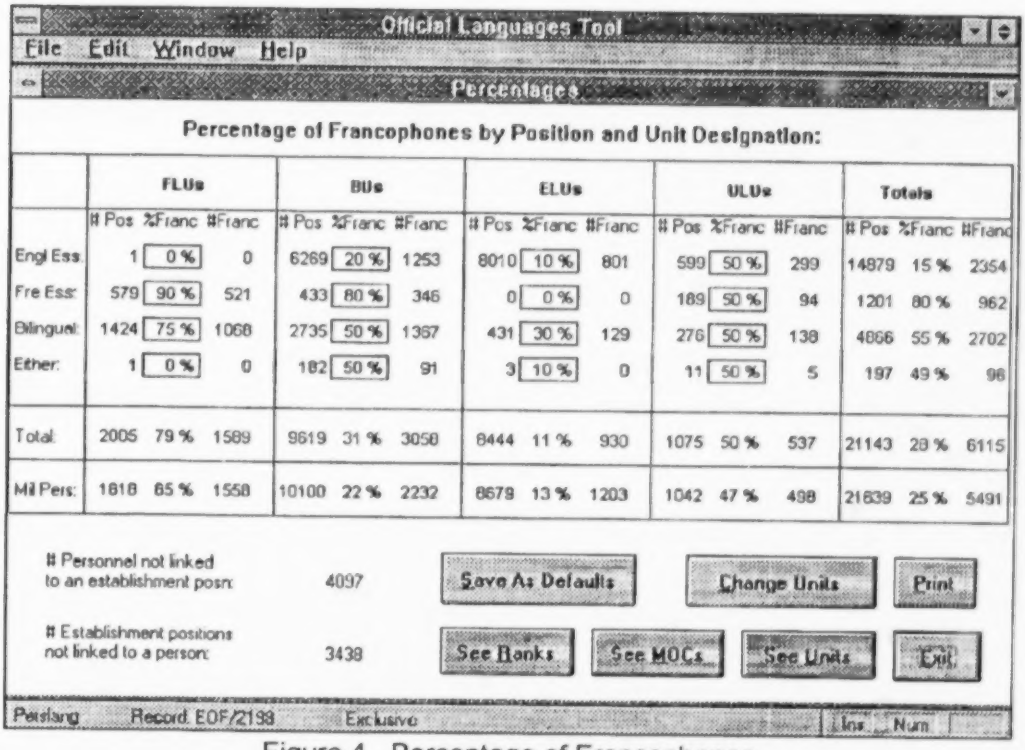
12. A design decision had to be made about the degree of establishment detail to be modelled. The current OLT models establishment down to two levels, (ie. any two out of three factors for rank, EMOC and unit). It is physically possible to model three levels but each stratification requires making an additional estimate about how the data should be partitioned. Two levels was selected because most cells have large enough numbers to normalize the errors in the estimate. A third level of detail expands the number of cells for the same pool of data.

13. Another reason to avoid partitioning data too far down is that it significantly increases processing time while yielding progressively more speculative results. This is the reason for not partioning by sex at this time. There are no difficulties with stratifying the actual data down three levels of detail or alling easy to access individual records from any level of grouping.

4 - OFFICIAL LANGUAGES TOOL

Setting Model Francophone Percentages

14. A database program was developed in FoxPro to examine the language mixtures of military establishment. The program uses actual military establishment and personnel data to view the effects of official language policy.


Official Languages Tool
File Edit Window Help
Percentages
Percentage of Francophones by Position and Unit Designation:
FLUs
BUs
ELUs
ULUs
Totals
Pos %Franc #Franc
Engl Ess: 1 0 % 0 | 6269 20 % 1253 | 8010 10 % 801 | 599 50 % 299 | 14879 15 % 2354
Fre Ess: 579 90 % 521 | 433 80 % 346 | 0 0 % 0 | 189 50 % 94 | 1201 80 % 962
Bilingual: 1424 75 % 1068 | 2735 50 % 1367 | 431 30 % 129 | 276 50 % 138 | 4866 55 % 2702
Either: 1 0 % 0 | 182 50 % 91 | 3 10 % 0 | 11 50 % 5 | 197 49 % 96
Total: 2005 79 % 1589 | 9619 31 % 3058 | 8444 11 % 930 | 1075 50 % 537 | 21143 28 % 6115
Mil Pers: 1818 65 % 1558 | 10100 22 % 2232 | 8678 13 % 1203 | 1042 47 % 498 | 21639 25 % 5491
Personnel not linked to an establishment posn: 4097
Establishment positions not linked to a person: 3438
Save As Defaults
Change Units
Print
See Ranks
See MOCs
See Units
Exit
Peristang
Record: EOF/2138
Exclusive
Ins
Num
Figure 4 - Percentage of Francophones

15. The program, called the Official Languages Tool (OLT), begins with the screen shown in Figure 1. This screen permits the changes to the percentages of Francophones in each position designation and unit designation combination. The

four types of units are listed along the top, and the four types of positions are listed on the side. There are three values listed for each position/unit combination:

a. The number of military establishment positions with a given language designation in all units of a given designation;
b. The percentage of those positions filled with Francophone personnel, according to the OL model; and
c. The resulting number of Francophone personnel.

16. In the example in Figure 1, there are 1424 Bilingual positions in the current establishment at FLUs. The percentage value of 75% says that, according to OLT, this percentage of those positions should be occupied by Francophones, which works out to be 1068 Francophones.

17. Also shown on this screen are the overall totals for the establishment, and the overall totals for the actual personnel. In the example, the percentages entered for Francophone participation would result in 28% of all Air Command establishment positions being filled by Francophone personnel. The personnel data, however, indicates that 23% of positions are filled by Francophones.

18. Also given is the number of positions that could not be matched up to actual personnel. In this case, 3438 establishment positions exist that did not have an associated person. There were also 4097 military personnel listed that were not associated with an establishment position.

19. The numbers that first appear as percentages in this screen are the default values that are saved. As these values are changed, the Francophone numbers and percentages change automatically, but the new numbers are not saved. The new values can be saved by clicking on the **Save As Default** button. This saves

the values on the screen as the default values for the application so that they come up each time the program is run.

Changing Unit Designations

20. The OLT has the option to change the language designation of units to see the effect on the overall values. Clicking on the **Change Units** button gives the screen shown in Figure 2. The language designation of a unit can be changed by selecting the unit from the list at left, and choosing the new designation from the radio buttons in the center of the screen. The unit then appears in the right hand list with the new language designation. Note that this does not change any of the position designations in the unit, only the designation of the unit itself. The unit can also be deleted from consideration by choosing the Delete option.

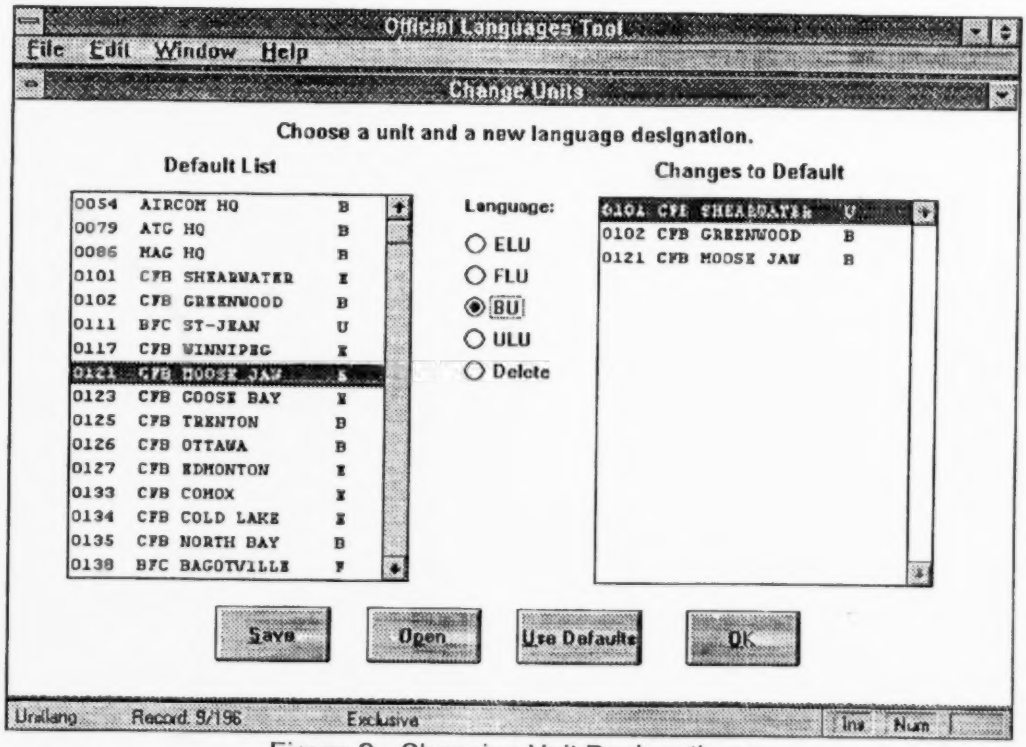


Figure 2 - Changing Unit Designations

21. The **Save** button on this screen will save a list of unit changes. When this button is selected, a screen appears asking for a file name to be entered to save the list of changes. The **Open** button is used to recall a saved list of changes. The **Use Default** button returns all units to their original settings. The **OK** button returns to the previous screen.

Viewing Rank Effects

22. The screen in Figure 3 is shown upon choosing the **See Ranks** button from the percentages screen. This shows the composition of each rank group according to the model percentages and current establishment positions. Alongside these figures, the actual composition of personnel in the establishment positions are

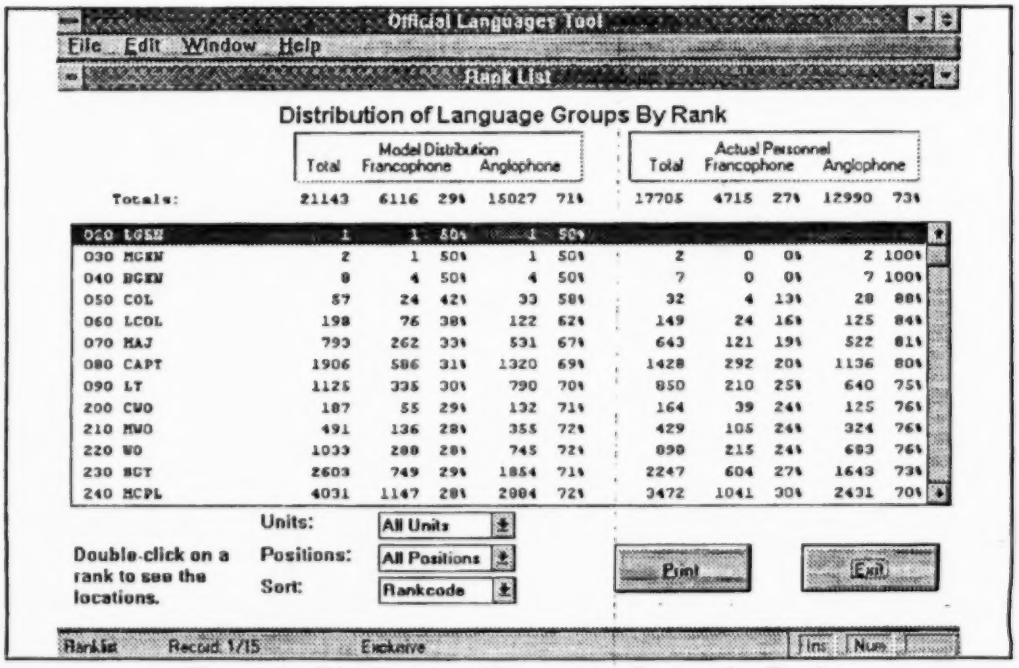
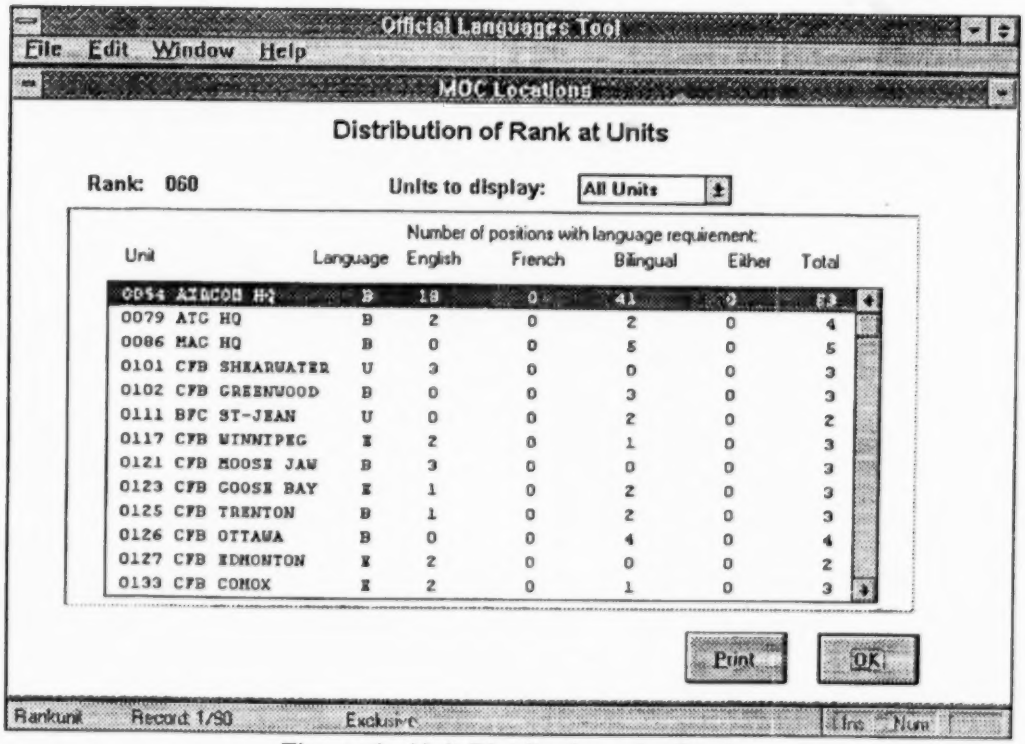


Figure 3 - Distribution of Language Groups by Rank

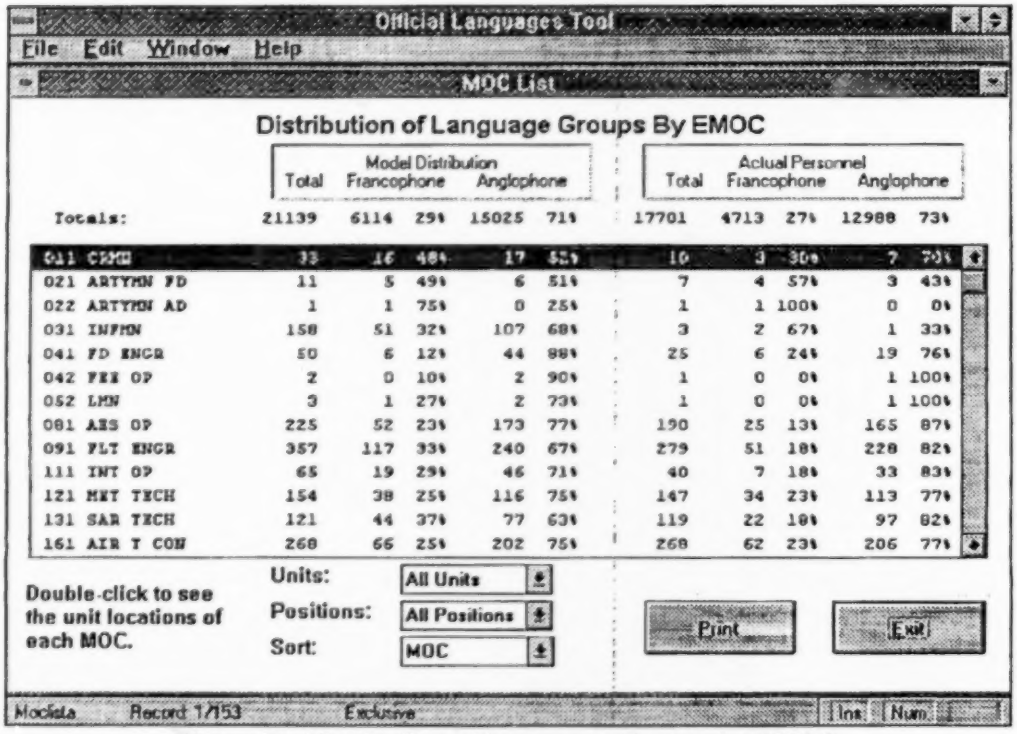
shown. The pop-up menus at the bottom of the screen affect how the data is displayed. The data can be limited to only show information for units of a given designation (eg: FLUs only), or for positions of a given designation (eg: English Essential positions). The list can also be sorted in a number of ways through the Sort pop-up menu.

23. The locations of each rank group can be seen by double-clicking on any of the ranks. The screen shown in Figure 4 appears. This screen shows a list of all units containing establishment positions of the selected rank and the language designation of those positions. The pop-up menu above the list permits viewing of only those units with a given designation (eg: FLUs only).


Official Language Tool
File Edit Window Help
MOC Locations
Distribution of Rank at Units
Rank: 060
Units to display: All Units
Number of positions with language requirement:
Unit Language English French Bilingual Either Total
0079 ATC HQ B 2 0 2 0 4
0086 MAC HQ B 0 0 5 0 5
0101 CFB SHEARWATER U 3 0 0 0 3
0102 CFB GREENWOOD B 0 0 3 0 3
0111 BFC ST-JEAN U 0 0 2 0 2
0117 CFB WINNIPEG E 2 0 1 0 3
0121 CFB MOOSE JAW B 3 0 0 0 3
0123 CFB GOOSE BAY E 1 0 2 0 3
0125 CFB TRENTON B 1 0 2 0 3
0126 CFB OTTAWA B 0 0 4 0 4
0127 CFB EDMONTON E 2 0 0 0 2
0133 CFB COMOX E 2 0 1 0 3
Print
OK
Rankunit Record 1/90 Exclusive Ins Num
Figure 4 - Unit Distribution of a Rank

Viewing EMOC Effects

24. The model effects on each Establishment MOC (EMOC) can be seen by clicking on the **See MOCs** button on the percentages screen. The resulting screen, as shown in Figure 5, displays establishment positions by EMOC, the modeled distribution of Anglophones and Francophones within the EMOC, and the actual distribution of Anglophones and Francophones in each EMOC.


Official Languages Tool
File Edit Window Help
MOC List
Distribution of Language Groups By EMOC
Model Distribution
Actual Personnel
Total Francophone Anglophone
Totals: 21139 6114 29% 15025 71% 17701 4713 27% 12988 73%
011 CMMD 33 16 48% 17 52% 10 3 30% 7 70%
021 ARTYMN FD 11 5 49% 6 51% 7 4 57% 3 43%
022 ARTYMN AD 1 1 75% 0 25% 1 1 100% 0 0%
031 INFMN 158 51 32% 107 68% 3 2 67% 1 33%
041 FD ENGR 50 6 12% 44 88% 25 6 24% 19 76%
042 FEE OP 2 0 10% 2 90% 1 0 0% 1 100%
052 LMN 3 1 27% 2 73% 1 0 0% 1 100%
081 AES OP 225 52 23% 173 77% 190 25 13% 165 87%
091 FLT ENGR 357 117 33% 240 67% 279 51 18% 228 82%
111 INT OP 65 19 29% 46 71% 40 7 18% 33 83%
121 MET TECH 154 38 25% 116 75% 147 34 23% 113 77%
131 SAR TECH 121 44 37% 77 63% 119 22 18% 97 82%
161 AIR T CON 268 66 25% 202 75% 268 62 23% 206 77%
Double-click to see the unit locations of each MOC.
Units: All Units
Positions: All Positions
Sort: MOC
Print
Exit
Modata Record 1/153 Exclusive Ins Num
Figure 5 - Distribution of Language Groups by EMOC

25. Double-clicking on any of the EMOCs brings up a list of units where those EMOCs are located, as shown in Figure 6. The language designation of these positions are also shown. The units being viewed can be limited to those with a given language designation by selecting an option from the pop-up menu.

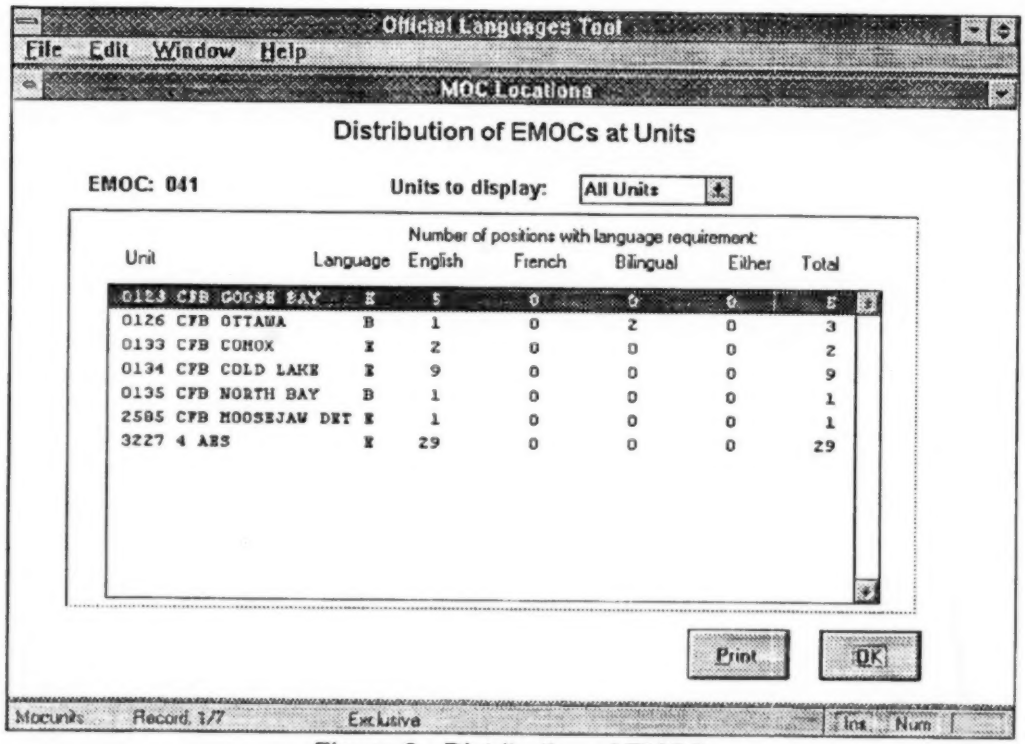


Figure 6 - Distribution of EMOC

Viewing Unit Effects

26. The effects of Official Language policy on each unit can be seen by choosing the **See Units** option from the Percentages screen. The number of establishment positions at each unit is given, along with the distribution of Anglophones and Francophones according to the Official Languages model, as seen in Figure 7. The actual distribution of personnel in the establishment positions at each unit is also given. The view can be limited by position and/or unit language designation by using the pop-up menus at the bottom of the screen. The list can also be sorted through use of another pop-up menu at the bottom of the screen.

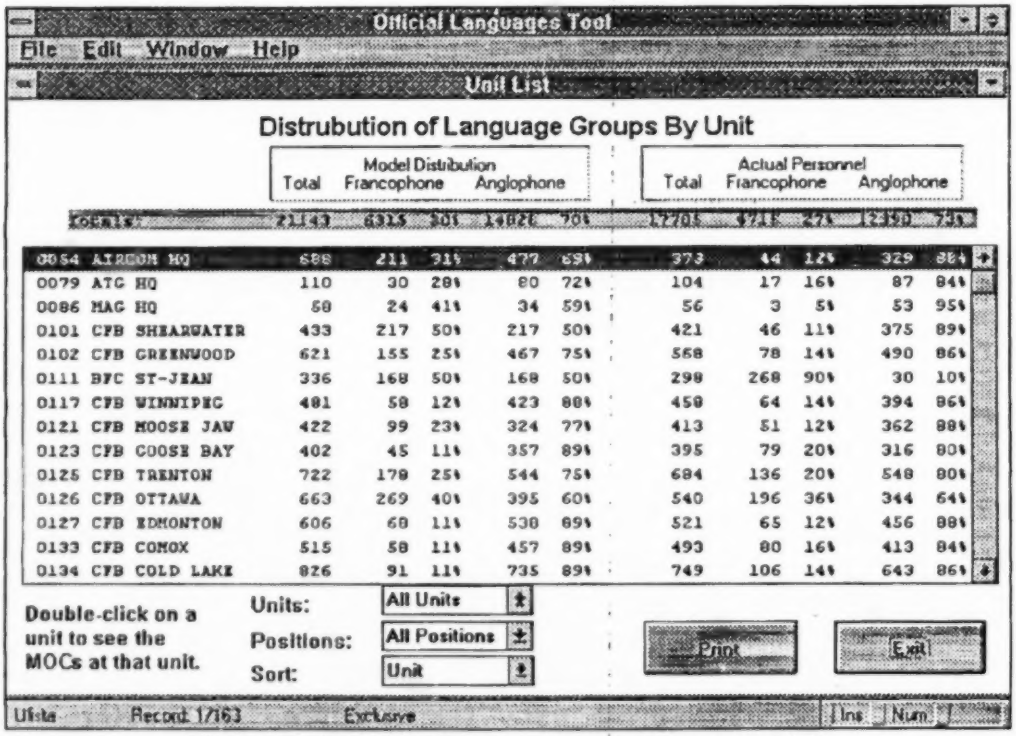

Official Languages Tool
File Edit Window Help
Unit List
Distrubution of Language Groups By Unit
Model Distribution
Total Francophone Anglophone
Actual Personnel
Total Francophone Anglophone
0054 AIRCOM HQ 688 211 31% 477 69% 373 44 12% 329 88%
0079 ATC HQ 110 30 28% 80 72% 104 17 16% 87 84%
0086 MAG HQ 58 24 41% 34 59% 56 3 5% 53 95%
0101 CFB SHEARWATER 433 217 50% 217 50% 421 46 11% 375 89%
0102 CFB GREENWOOD 621 155 25% 467 75% 568 78 14% 490 86%
0111 BFC ST-JEAN 336 168 50% 168 50% 298 268 90% 30 10%
0117 CFB WINNIPEG 481 58 12% 423 88% 458 64 14% 394 86%
0121 CFB MOOSE JAW 422 99 23% 324 77% 413 51 12% 362 88%
0123 CFB GOOSE BAY 402 45 11% 357 89% 395 79 20% 316 80%
0125 CFB TRENTON 722 178 25% 544 75% 684 136 20% 548 80%
0126 CFB OTTAWA 663 269 40% 395 60% 540 196 36% 344 64%
0127 CFB EDMONTON 606 68 11% 538 89% 521 65 12% 456 88%
0133 CFB COMOX 515 58 11% 457 89% 493 80 16% 413 84%
0134 CFB COLD LAKE 826 91 11% 735 89% 749 106 14% 643 86%
Double-click on a unit to see the MOCs at that unit.
Units: All Units
Positions: All Positions
Sort: Unit
Print
Exit
Record 1/163
Exclusive
Ins
Num

Figure 7 - Distribution of Language Groups by Unit

27. A list of the EMOCs at each unit and the position language designation of each position can be shown by double-clicking on a unit. The screen shown in Figure 8 is used to show this information.

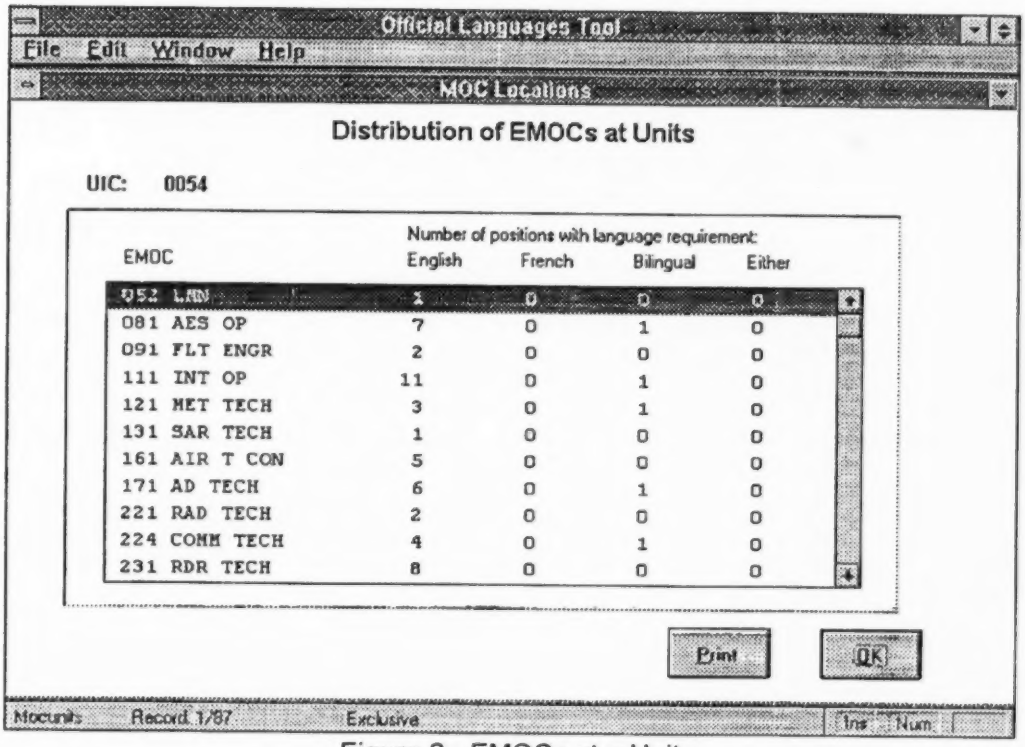


Figure 8 - EMOCs at a Unit

5 - DATA REQUIREMENTS

28. The OLT makes use of two levels of data in order to operate. The first level consists of the establishment and personnel data. These databases are identical to those used for other tools within the Operational Research Division, which should ease the burden of data collection. The personnel and establishment databases are used in the creation of the second level of database, but are not required to be present for the OLT to operate.

29. The second level consists of three principal databases, which are aggregated from the first level. The program **gen_data.prg** is used to generate these databases from those in the first level. Once generated, they do not have to be regenerated until the databases in the first level change.

30. The first is called **language.dbf** and is created from the establishment database. It gives the number of positions of each language designation at each unit, rank, and EMOC. For example, it may say that there are three bilingual and seven English positions at unit 0054 of rank 0060 and EMOC 0117.

31. The second database at this level is called **perslang.dbf**. This database gives the number of personnel at each unit and rank who have a given first language (ie; Anglophone or Francophone). For example, this database could say that there are three Anglophones at unit 0054 of rank 040.

32. The third database is called **persestb.dbf**, and is used to correlate the aggregated establishment and personnel databases by identifying the number of personnel with each first language who occupy establishment positions. For example, the database could show that there are Anglophones occupying five

Bilingual and two English Essential positions of EMOC 111 at unit 0054 and rank 040.

33. There are a handful of other databases that are used for this program. These databases function mainly as lookup tables for other areas of the program, namely:

a. **emlookup.dbf**: Gives a name for each EMOC code;

b. **l_rank.dbf**: Gives the name of each rank;

c. **uic.dbf**: Gives the name of each UIC; and

d. **unitlang.dbf**: Gives the language designation of each unit.

34. One more database is required for the operation of the OLT. This database is named **percnts.dbf**, and it contains the percentage of Francophones in each unit/position type according to the model.

6 - RECOMMENDATIONS

35. A number of improvements can be made to the OLT. The first would be to expand the ability of the program to handle personnel questions. At present, the program concentrates on the establishment numbers. However, it could be adapted to answer questions about personnel, such as determining the bilingual capabilities for personnel groups.

36. The underlying databases for the OLT are the same as those used in the Operational Research Division for the Establishment Management Tool (EMT). It would therefore be possible to combine the two tools into a single unified package. The OLT would then become a subset of the larger EMT, and could even benefit from the advanced modeling capabilities planned for inclusion in the EMT.

37. A number of other ways of displaying the data could be incorporated into the OLT, such as viewing totals by command or by wing. Additional capabilities such as graphing and saving data for trend analysis could also be added as resources permit.

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A database tool was developed in FoxPro to portray the effects of changes in the Francophone to Anglophone ratio, and the effect of changing the language designation of units. This tool shows the effect on units, on EMOCs, and on ranks of these changes. A utility to create the needed databases from previously existing databases is included.

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